

Walking Data

Success metrics and systems impact

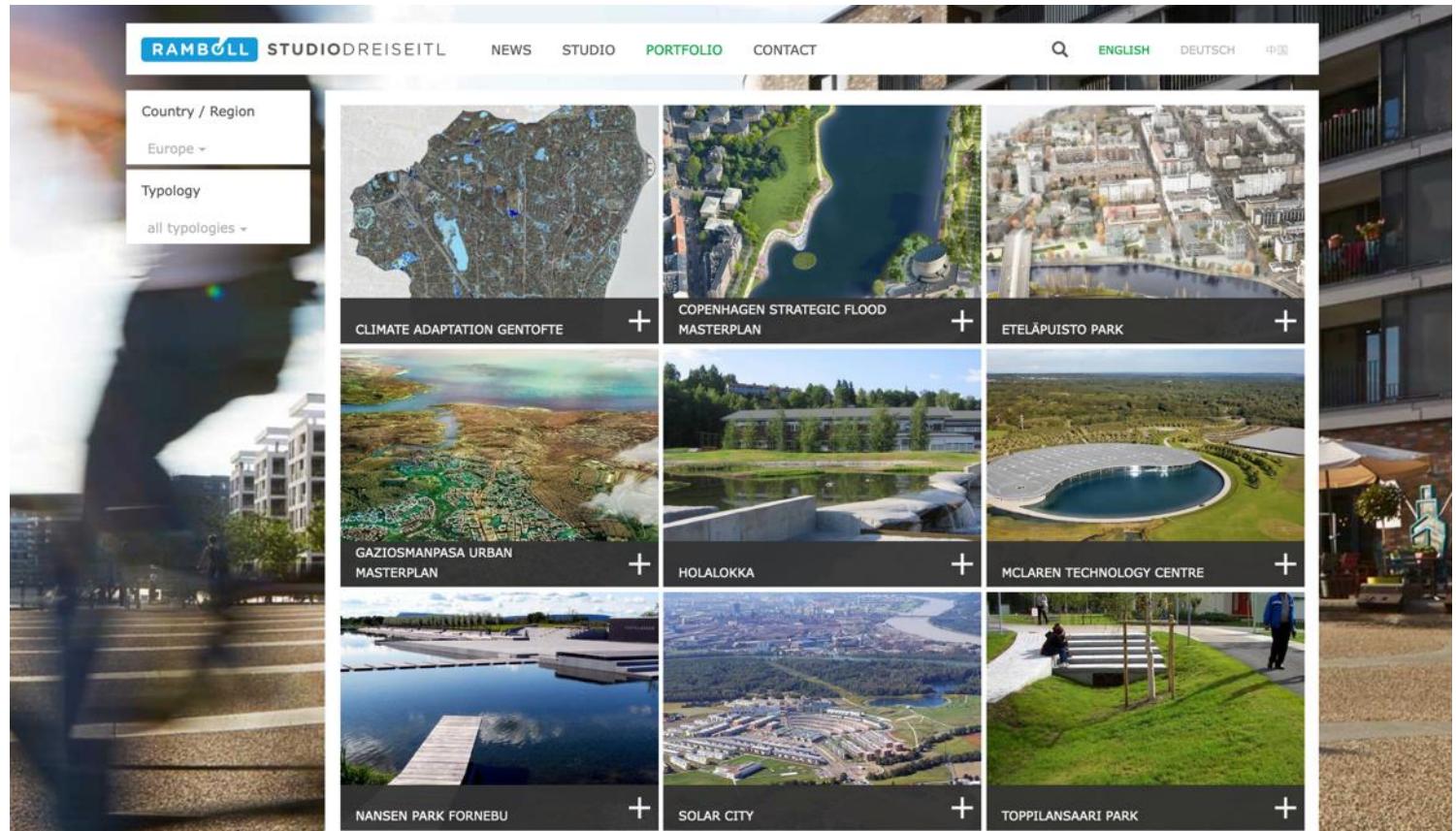
March 2026



ARUP



Introduction Jess Read



- > 25 years' experience, chartered nature-based engineer
- Designed schemes in Copenhagen, Oulu, Oslo, NYC, Portland, Oregon etc.
- Current work – Rural Cycling Playbook, Living Streets Scotland

Walking data – what do we mean?

We are talking about **spatial traffic data**,
as different from walking preferences and barriers
data as captured in the Walking and Cycling Index

Where does walking data “live” in Scotland?

Ūsmart.io >> Cycling Open Data

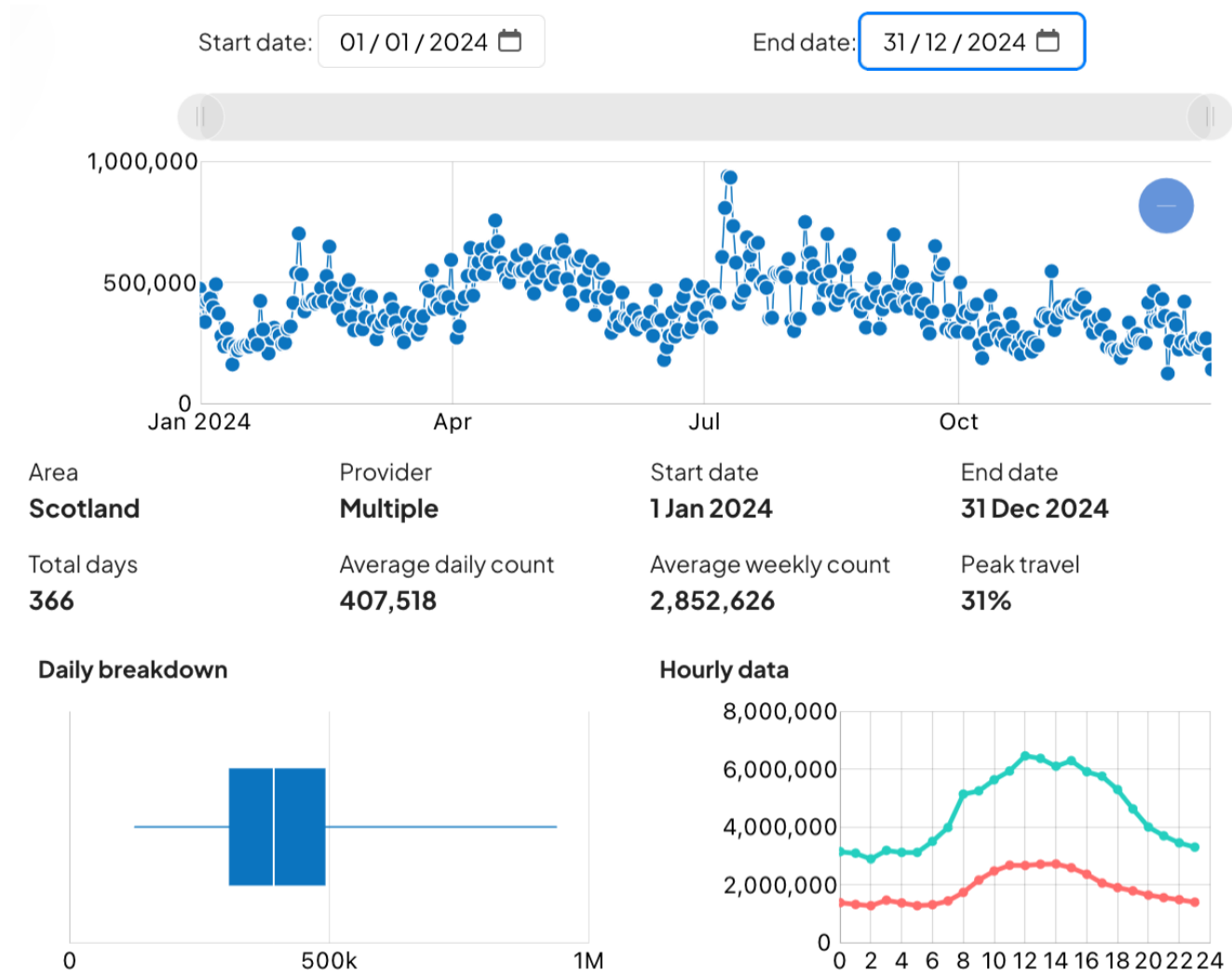
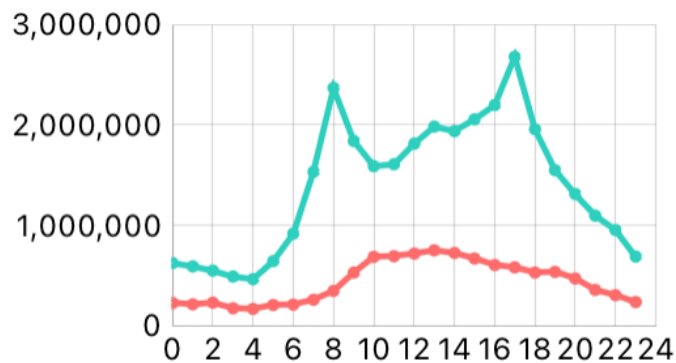


Image © Ūsmart

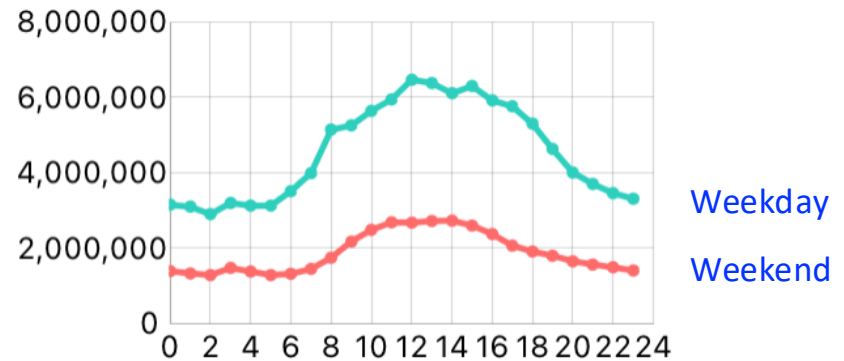
Cycling Open Data – is this a representative data set?

Hourly data



Average hourly cycling traffic

Hourly data



Average hourly walking traffic

Weekday
Weekend

- This data is not representative of walking, as many key walking locations not included e.g. high streets
- Daily and seasonal dips - related to lighting?
- Travel to work journeys not a good proxy for walking

Image © Ūsmart

National level, aggregate data

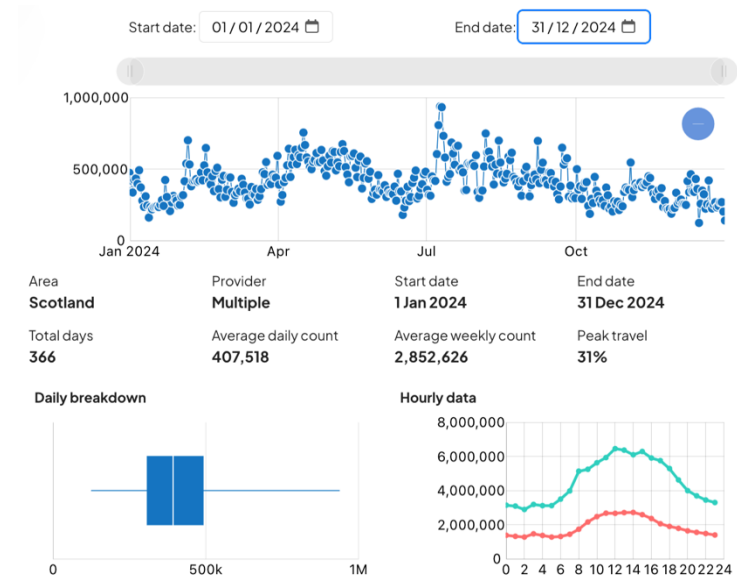


Image © Ūsmart

→ Track changes over time against e.g.

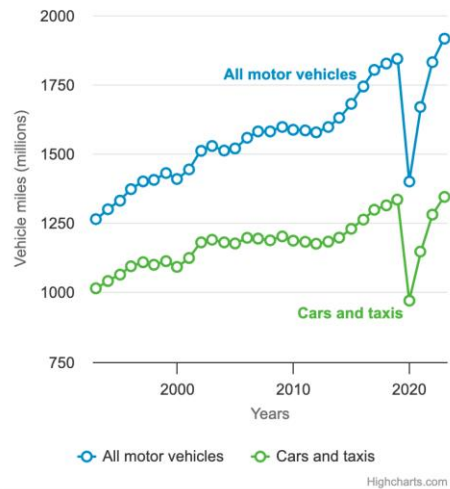
- Infrastructure £££s
- Weather – climate change may wipe out increases
- All modes traffic - monitor the shift

→ Cycling Open Data – should we rename this? No

National Traffic Statistics – AADT

Annual traffic by vehicle type in Highland

Traffic in Great Britain from 1993 to 2023 by vehicle type in vehicle miles (millions)



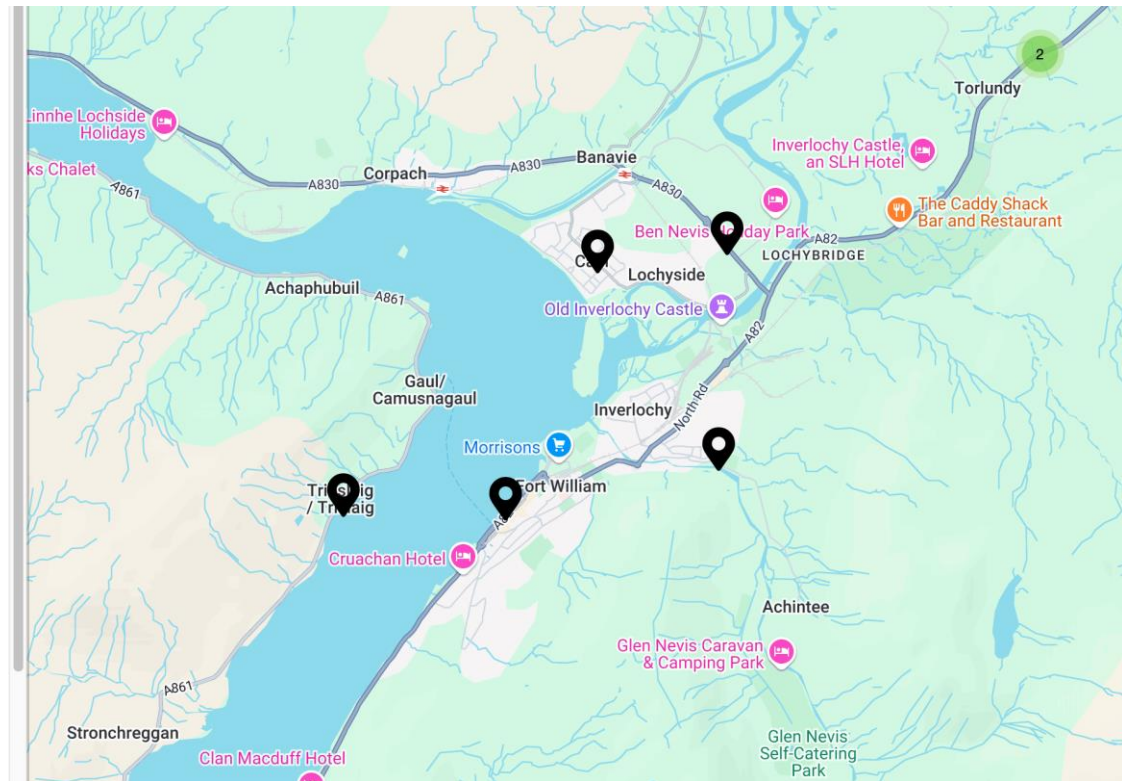
Manual count points

221

Major roads

87

Minor roads



- National coverage is there (rural and urban)
- Frequently accessed data set
- No walking data

National Traffic Statistics – AADT

Achintee Road site 804909 → one of the premier walking destinations in the world...

Annual Average daily flow

Year	Count method	Pedal cycles	Two wheeled motor vehicles	Cars and taxis	Buses and coaches	Light goods vehicles	Heavy goods vehicles	All motor vehicles
2023	Manual count	12	8	242	3	78	5	337
2022	Manual count	13	0	225	1	83	3	313
2021	Manual count	4	4	203	0	55	5	268
2020	Manual count	18	0	65	0	17	4	86
2019	Estimated using previous year's AADF on this link	5	0	199	0	87	17	302
2018	Manual count	4	0	198	0	87	18	304

National Traffic Statistics – AADT

Niddrie Mains, Edinburgh site 41015 → community high street

Year	Count method	Pedal cycles	Two wheeled motor vehicles	Cars and taxis	Buses and coaches	Light goods vehicles	Heavy goods vehicles	All motor vehicles
2023	Estimated using previous year's AADF on this link	101	70	11189	292	2105	238	13894
2022	Estimated using previous year's AADF on this link	103	71	10983	289	2070	242	13654
2021	Estimated using previous year's AADF on this link	115	65	10283	269	1910	232	12758
2020	Estimated using previous year's AADF on this link	141	61	9333	260	1752	216	11622
2019	Manual count	123	82	12288	412	1985	245	15012

Manual counts:
2001, 2006,
2019

What can we use walking data for?

Dean Valley, Edinburgh with Living Streets Scotland

Living Streets Scotland pedestrian count data

Hour ending	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	Total
Day1 (Weds)	0	2	0	0	0	1	3	29	70	35	81	81	135	106	233	147	151	154	50	30	5	9	6	2	1331
Day2 (Thurs)	1	0	2	0	0	0	4	22	74	46	104	111	123	135	215	107	194	149	47	14	7	11	2	3	1371
Day3 (Fri)	0	0	0	0	0	2	7	15	61	61	90	138	95	90	49	59	137	64	18	11	3	5	1	0	906
Day4 (Sat)	1	0	0	1	0	0	2	5	21	33	85	110	128	155	189	196	195	133	17	12	3	4	4	5	1299
Day5 (Sun)	1	0	0	1	0	0	0	7	41	86	208	340	453	469	527	380	204	117	40	14	4	2	1	1	2896
Day6 (Mon)	2	0	0	0	0	0	6	31	66	67	110	120	113	116	124	141	134	74	0	0	0	0	0	0	1104
Day7 (Tues)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Weekday average	1	0	0	0	0	1	4	19	54	42	77	90	93	89	124	91	123	88	23	11	3	5	2	1	942
Weekend average	1	0	0	1	0	0	1	6	31	60	146	225	291	312	358	288	199	125	29	13	4	3	2	3	2098
Daily average	1	0	0	0	0	0	3	16	48	47	97	129	150	153	191	147	145	99	25	12	3	4	2	2	1272
6 day total	5	2	2	2	0	3	22	109	333	328	678	900	1047	1071	1337	1030	1015	691	172	81	22	31	14	11	8907



Location: EH4 1PL

Start: 00:01 Weds 16/10/2019

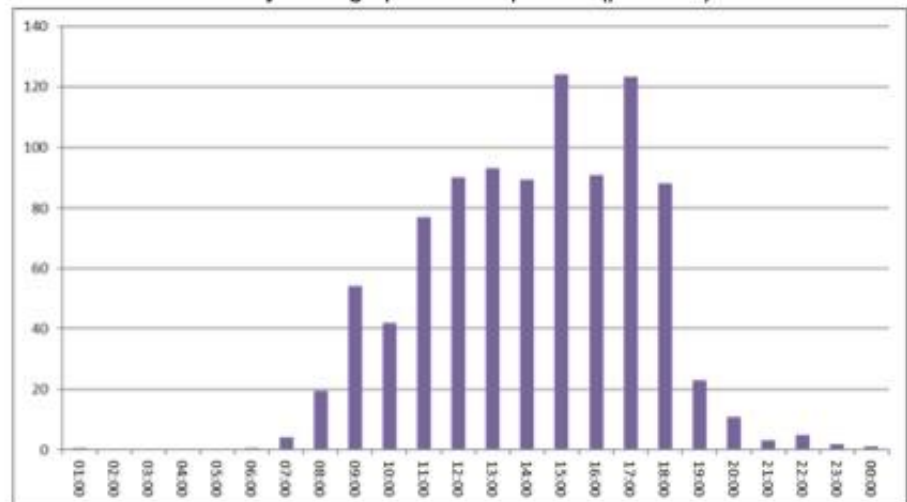
Finish: 23:59 Mon 21/10/2019

6 day count total 8907



Average daily traffic 1485 peds/day

Daily average pedestrian passes (per hour)



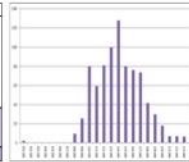
Dean Valley, Edinburgh with Living Streets Scotland

Living Streets Scotland pedestrian count data

Start: 00:01 Weds 20/11/2019 Finish: 23:59 Tues 26/11/2019

7 day count total 7069

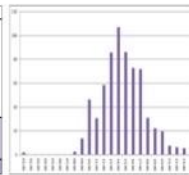
Hour ending	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	Total
Day1 (Wed)	4	0	0	0	0	0	0	13	24	65	72	85	98	155	81	106	93	85	22	22	4	0	0	1	885
Day2 (Thurs)	0	0	0	1	0	0	0	8	29	100	56	92	96	119	75	100	74	47	37	20	5	8	9	1	877
Day3 (Fri)	1	1	1	0	0	0	0	9	21	63	49	83	66	90	89	71	98	51	29	12	6	2	4	9	755
Day4 (Sat)	3	1	0	0	0	0	0	2	14	32	78	113	173	134	115	74	71	31	8	9	7	7	0	4	876
Day5 (Sun)	3	5	0	0	0	1	0	0	2	24	93	284	341	377	310	241	249	59	28	6	11	4	2	7	2045
Day6 (Mon)	1	0	0	0	0	0	7	27	71	57	81	158	77	104	70	56	29	28	15	9	5	6	4		935
Day7 (Tues)	2	0	0	0	0	0	0	11	27	83	62	86	111	199	51	35	48	33	33	21	10	10	5	1	826
Weekday average	2	0	0	0	0	0	0	10	26	80	59	81	100	128	80	76	74	42	30	18	7	7	6	3	830
Weekend average	3	3	0	0	0	1	0	1	8	28	86	199	257	256	212	158	160	45	17	8	9	6	1	6	1461
Daily average	2	1	0	0	0	0	0	7	21	65	67	115	145	194	118	100	98	43	26	15	7	6	5	4	1010
7 day total	16	7	1	1	0	1	0	50	144	458	467	802	1014	1151	825	697	689	300	183	105	52	45	34	27	7069



Start: 12:01 Weds 11/12/2019 Finish: 23:59 Tues 26/12/2019

7 day count total 5795

Hour ending	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	Total
Day1 (Wed)	0	0	0	0	0	0	0	0	0	0	0	0	85	147	102	72	70	38	14	26	12	5	6	2	579
Day2 (Thurs)	2	1	0	0	0	0	0	3	18	61	44	63	63	92	85	63	63	38	30	15	6	7	3	4	662
Day3 (Fri)	2	0	0	1	0	0	0	2	12	43	29	62	101	105	80	69	62	28	20	29	6	7	7	2	667
Day4 (Sat)	4	1	0	0	0	0	0	0	3	20	30	97	126	117	96	119	74	29	9	4	6	1	3	1	740
Day5 (Sun)	3	3	0	1	0	0	0	3	7	34	77	214	258	288	329	259	150	32	8	10	9	2	5	0	1692
Day6 (Mon)	3	0	0	0	0	0	0	3	19	56	43	107	115	101	88	66	90	20	27	11	7	4	5	3	768
Day7 (Tues)	3	0	1	0	0	0	0	5	19	72	39	60	64	90	75	94	74	32	20	17	7	8	6	1	657
Weekday average	2	0	0	0	0	0	0	3	14	48	31	58	86	107	86	73	72	31	22	20	8	6	5	2	673
Weekend average	4	2	0	1	0	0	0	2	5	27	54	155	192	203	212	189	112	30	8	7	8	2	4	1	1216
Daily average	2	1	0	0	0	0	0	2	11	41	37	86	116	134	122	106	83	31	18	16	8	5	5	2	828
7 day total	17	5	1	2	0	0	0	16	78	266	262	603	812	940	855	742	583	217	128	112	53	34	35	13	5795



Start: 00:01 Weds 22/01/2019 Finish: 23:59 Tues 28/01/2020

7 day count total 8923

Hour ending	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	Total
Day1 (Wed)	3	0	0	0	0	0	0	8	30	86	57	84	128	125	116	90	80	88	43	23	13	8	8	3	993
Day2 (Thurs)	0	1	0	0	0	0	0	8	25	87	73	74	119	150	126	109	103	105	50	17	12	2	12	1	1074
Day3 (Fri)	2	0	0	0	0	0	0	6	23	74	82	94	93	155	117	102	141	154	33	13	10	11	28	7	1905
Day4 (Sat)	1	2	0	0	0	0	0	1	7	41	61	167	264	307	239	324	323	163	18	11	5	3	2	3	1963
Day5 (Sun)	1	2	2	0	1	0	0	1	10	23	81	181	232	269	276	337	235	192	18	15	11	1	5	0	1893
Day6 (Mon)	1	1	0	0	1	0	0	6	23	60	81	116	161	121	124	106	114	70	40	16	9	10	6	0	1066
Day7 (Tues)	0	0	0	0	0	0	1	6	61	60	67	82	121	81	83	73	67	75	33	15	10	2	6	4	848
Weekday average	1	0	0	0	0	0	0	7	32	73	72	90	124	126	113	96	101	90	40	17	11	7	12	3	1017
Weekend average	1	2	1	0	1	0	0	1	8	32	71	174	248	288	257	331	279	178	18	13	8	2	4	2	1918
Daily average	1	1	0	0	0	0	0	5	26	62	72	114	160	173	154	163	152	115	34	16	10	5	10	3	1275
7 day total	6	6	2	0	2	0	1	36	179	431	502	796	1118	1208	1081	1141	1063	807	235	110	70	38	67	16	8923

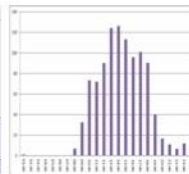


Image © Living Streets Scotland

Highest walking traffic from midday to 5 pm

→ lighting ?

→ Is some walking data better than no walking data?

Radiobeam monitor - Niddrie Mains, Edinburgh



Average 2000 pedestrians per day (2 week data collection)
with 4000 other side = 6000 pedestrians per day

Dún Laoghaire, Ireland



Image © Paul Ohara

- 3.6 km bi-directional pop-up, with traffic management

Dún Laoghaire, Ireland

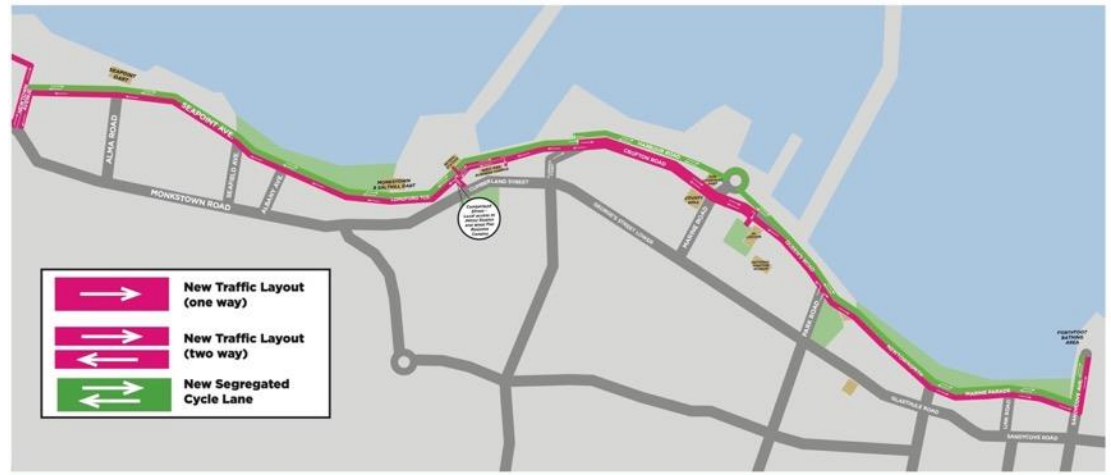


Image © Dún Laoghaire-Rathdown County Council

- Introduced as Covid measure & retained
- Strongest performing cycle route in Dublin
- Cycling Infrastructure Award at the 2022 Velo-City

Dún Laoghaire, Ireland

Does it work?

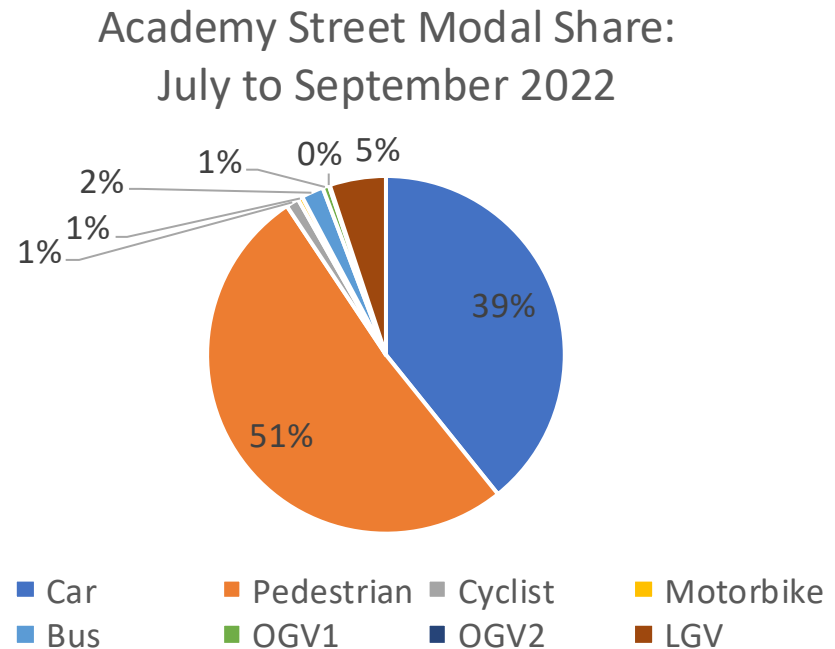
Traffic Mode	Seapoint Beach	Peoples Park
Walking	628	2596
Cycling	1403	1077

Table 33 – Walking and cycling daily average traffic counts^[1]

- No pre and post
- Demonstrates that it works
- Demonstrates the importance of collecting both w & c data

Vivacity Camera Network, Inverness

- 44 walking and cycling counters across Inverness
- 33 Vivacity cameras
- Multi modal
- Making the case

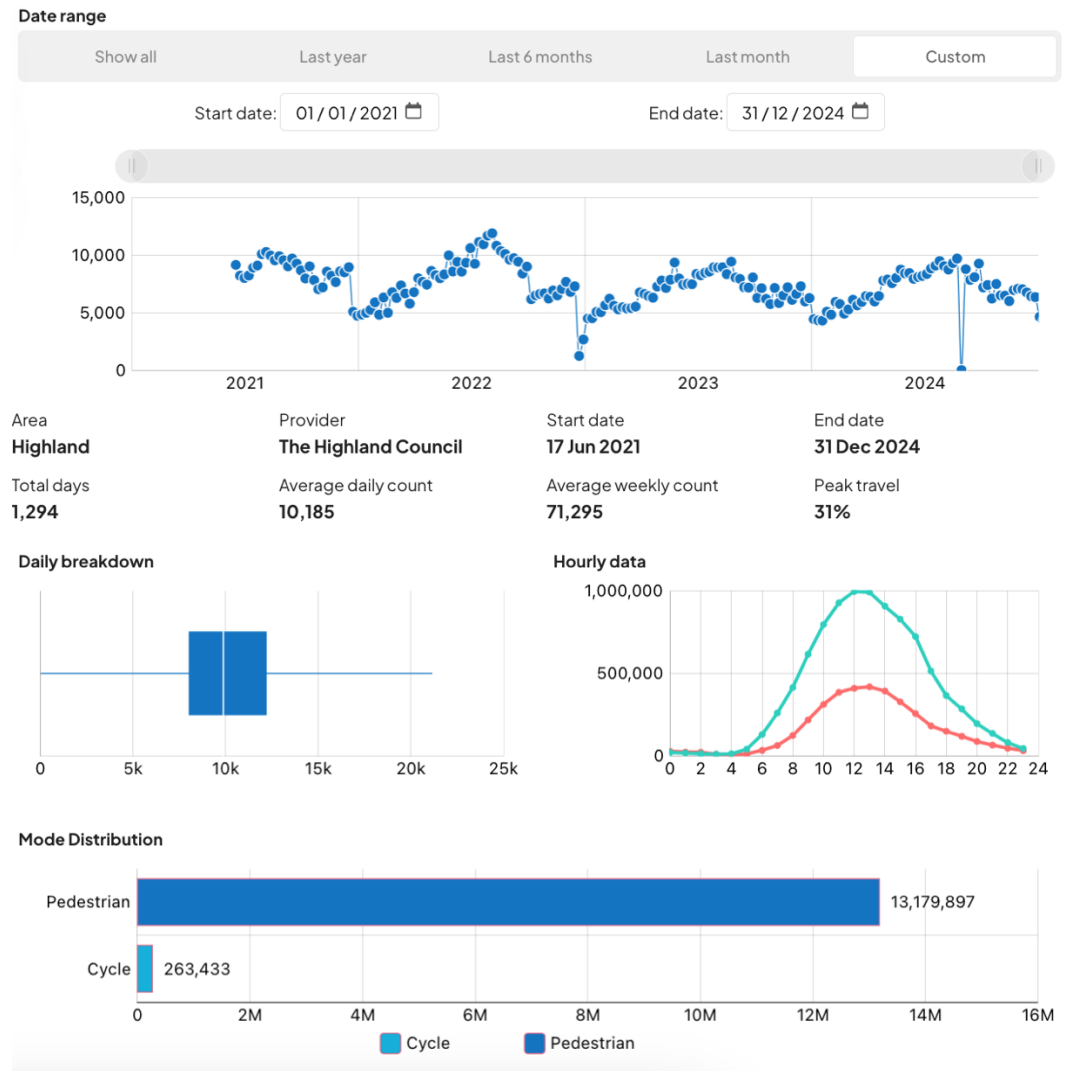


Vivacity Camera Network, Inverness – Academy Street

- Annual cost liability
- Needs mains connection
- No data failure alerts?
- Does this convince?

→ All modes jct and traffic models e.g. VisWalk

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What can you do with walking data?

→ All modes jct and traffic models e.g. VisWalk



App & mobile data, Transport for London

Walking in London

2020/02/17



Image © TfL

Transport for London

- Using lifestyle app (50-60) and mobile phone data from a data integrator
- Can be used to identify all modes (cars, trains, cycles, walking and dwell time)
- Can also provide relative modal share on street level
- Granularity down to local roads (enabling mapping of many roads well beyond current sensor reach)
- Validation variable, best for cars, they are exploring this currently
- Cost £25k-£40k per annum for the data, plus same again for conversion

Image © TfL

High Street Data Services, Greater London Authority

HIGH STREETS DATA SERVICE

Data: collectively purchased pan-London data assets

Mobility data

Footfall count, including return visits & dwell time
Resident, worker, and visitor counts
3-hr time blocks at 350-m resolution.

'True catchments,' home locations (LSOA) of
visitors and workers to high streets and BIDs.

Premises data

Retail loctions, including name, sector, floorspace.
Vacancy and opening/closing hours



Spend data

Three-hourly spend amount (index) and transaction
counts over 3-hour time blocks at 100m resolution.

Weekly spend (index), separated by retail category and
aggregated by weekday vs. weekend. Includes inflation-
adjusted figures.

Total in-store v online retail spend (£), aggregated to
inner & outer London, by retail subcategory.

City data **CITY INTELLIGENCE**

Curated public datasets, reports, and maps about retail
areas, planning policy boundaries, air quality, cultural
infrastructure, and opinion research.

**Subject to data procurement in December 2023*

Image © Greater London Authority

High Street Data Services, Greater London Authority

HIGH STREETS DATA SERVICE

Viz products: User-friendly reporting on the HSDS Hub (BETA)

Compare multiple areas



Monitor recent performance



Understand the context

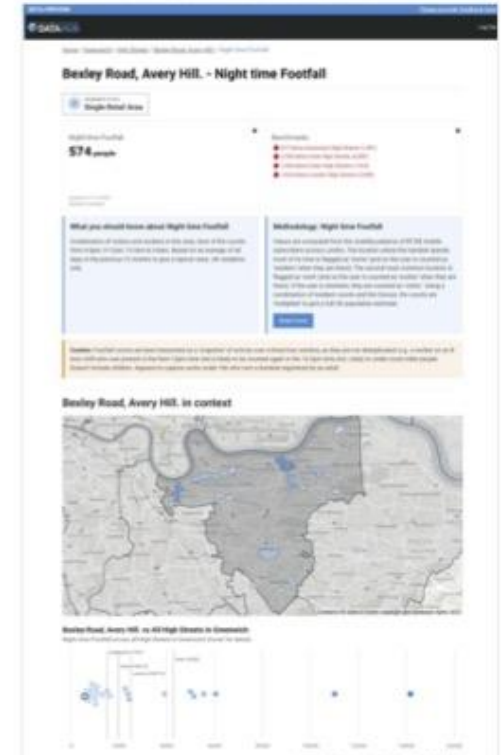


Image © Greater London Authority

High Street Data Services, Greater London Authority

- **Membership model** to fund collective purchase of data, quality assurance, analysis and data portal
- 21 London Boroughs, 15 BIDs, >200 users
- Variety of data sources
- Data can be queried by location and over time, user friendly reporting tools
- Cost £30,000/year each (£20k borough, £10k BIDs)

Geolocation intelligence data, Symaps.io

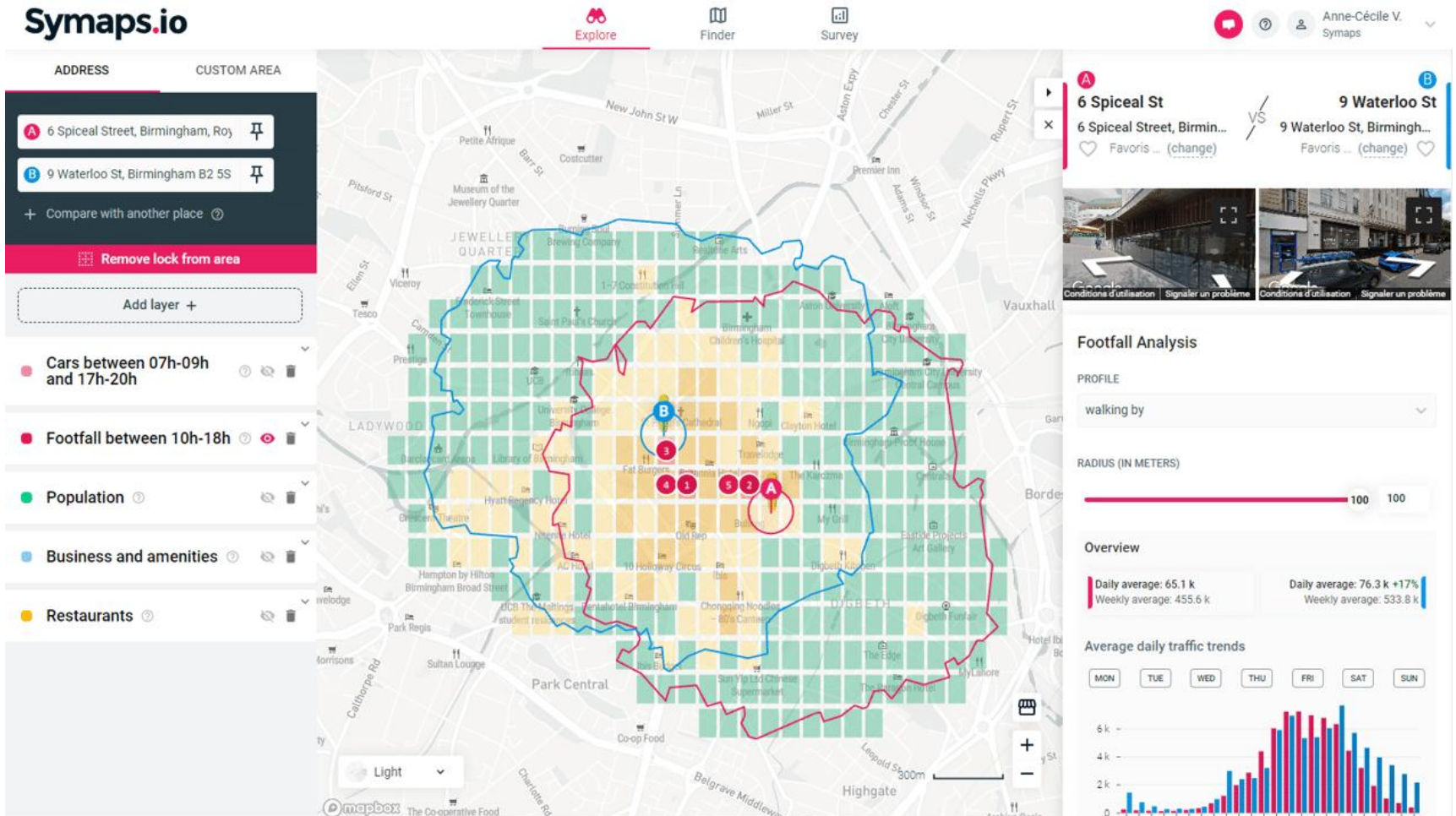


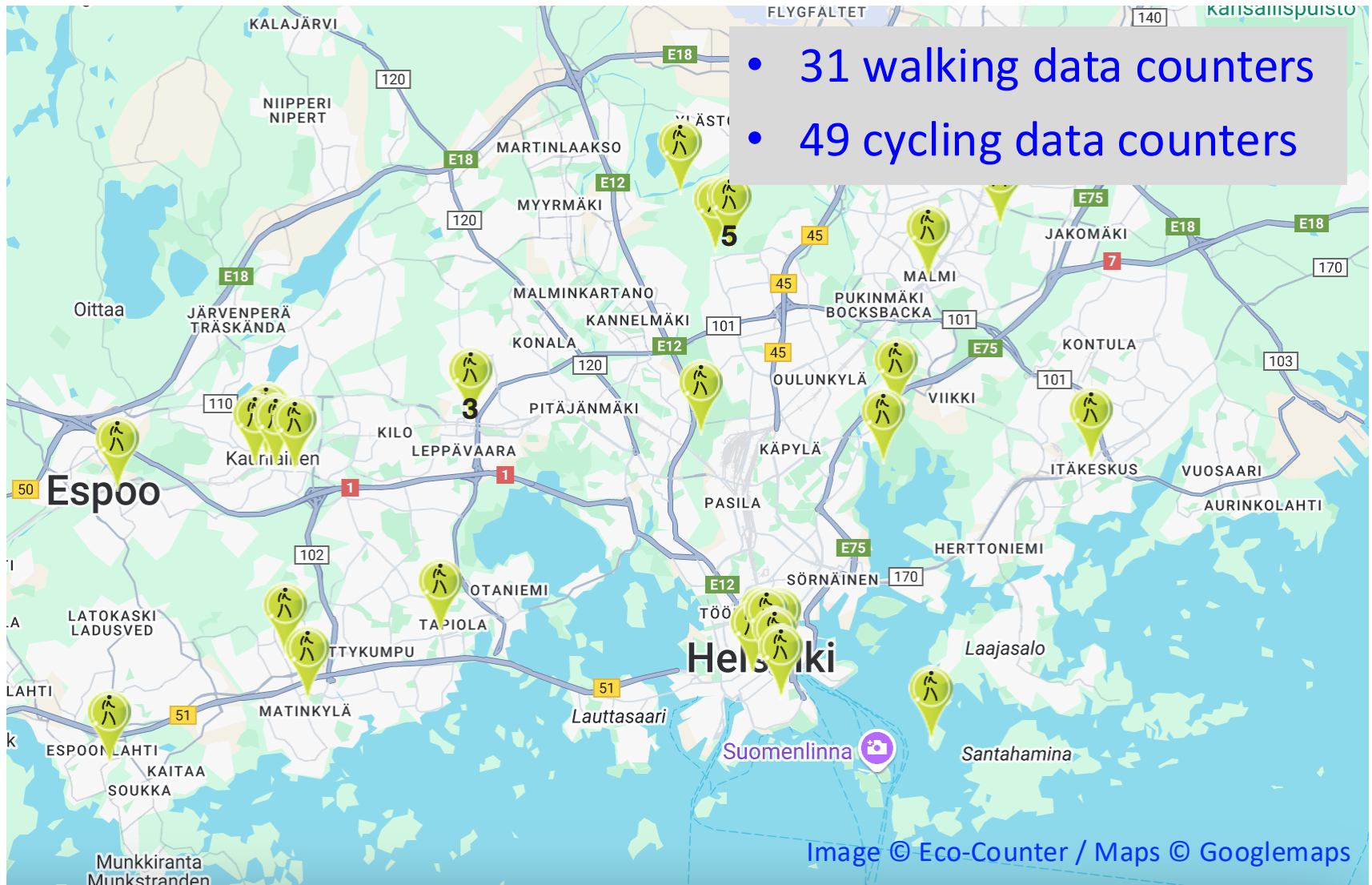
Image © Symaps.io

Geolocation intelligence data, Symaps.io

- Aim is to help global retail customers locate new store locations
- They sell access to the dashboard with interactive maps
- Not suitable for comparing before & after footfall (this is not their aim)
- Inspiring user friendly platform → communication
- What if other walking related data sets were included:
 - Carbon
 - Pollution (air, tyre-based microplastics)
 - Flood risk

Eco-Counter Network, Helsinki

- 31 walking data counters
- 49 cycling data counters



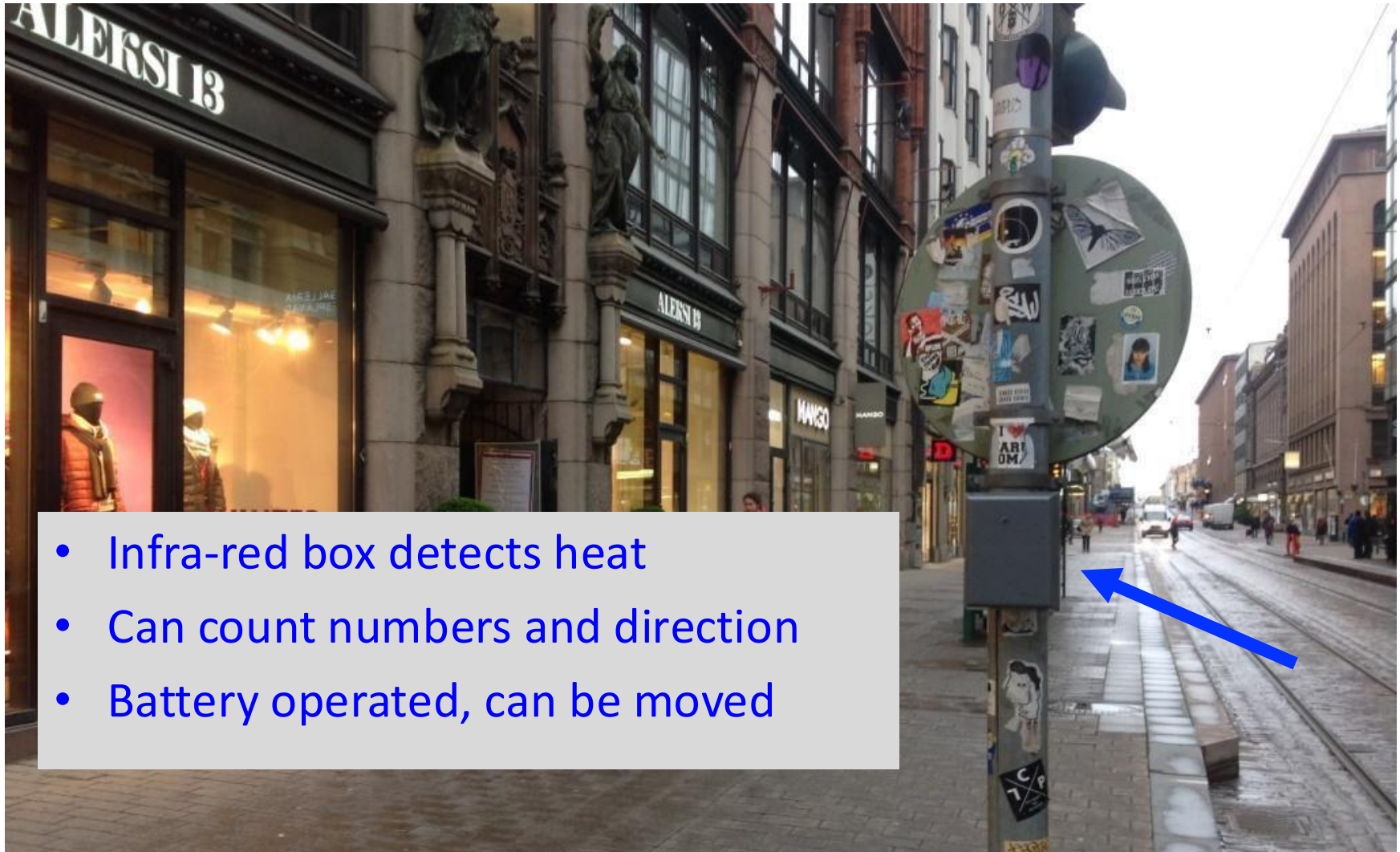
Eco-Counter Network, Helsinki



- Example Aleksanterinkatu, in central Helsinki
- Low carbon shopping street
- (spot the 10 m wide zebra!)

Image © Naturebased.UK

Eco-Counter Network, Helsinki



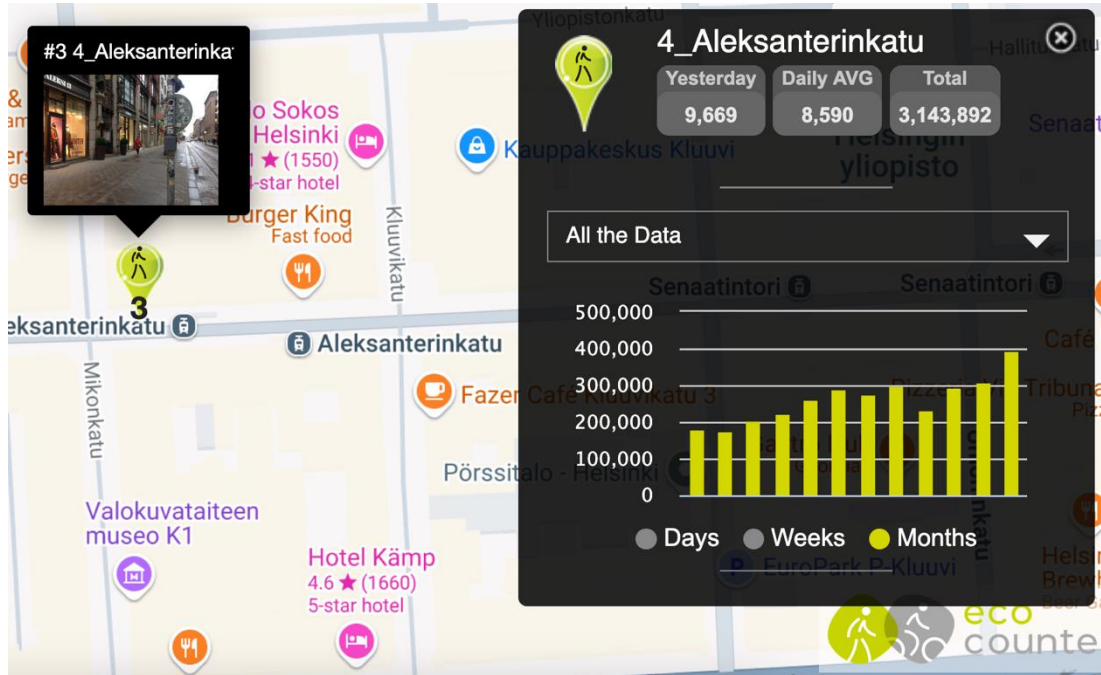
- Infra-red box detects heat
- Can count numbers and direction
- Battery operated, can be moved

Image © Eco-Counter.com

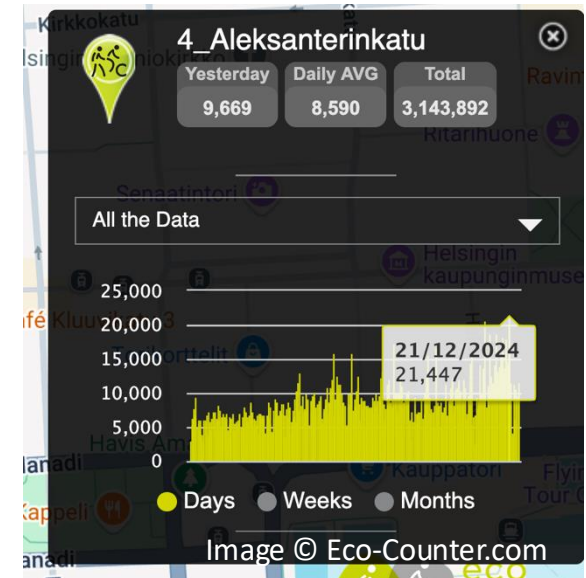
Eco-Counter Network, Helsinki

- Unobtrusive
- Quite high
 - Will not count children, wheelchair users or dogs
- On network level, variability?

Eco-Counter Network, Helsinki



Exploring data by day



→ Walking levels peak in December

- Connects to web platform with reporting tools, public website possible
- Can set time range, and query data e.g. by month or by day to identify seasonal trends

“We want to double cycling, but we do not want to double problems for pedestrians.”

City of Helsinki, Transport team in the early 2000s

VisitorFlow

Visualise and analyse pedestrian flows and stop zones in your area.

Available period
September 1, 2024 - September 30, 2024

Select a Period
September 2024

Zone
Nantes

Coming soon to VisitorFlow

- Customised study zones
- Site entrances / exits
- Duration of presence
- Recurrence of visits
- Analysis of seasons, weekends, etc.
- Impact of weather and events

Do you need more information or would you like to find out more?

[Make an appointment](#)

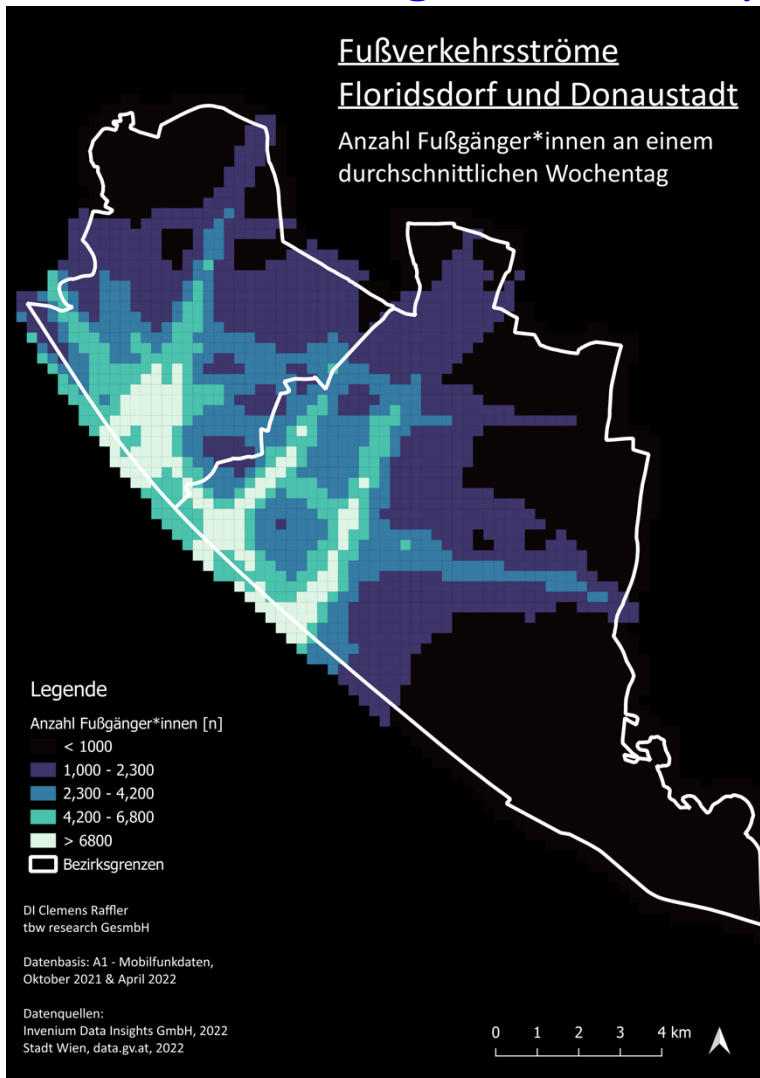
- Pedestrian heat map for central Nantes, France
- Counter data combined with mobile phone / app data (purchased from data broker)

37

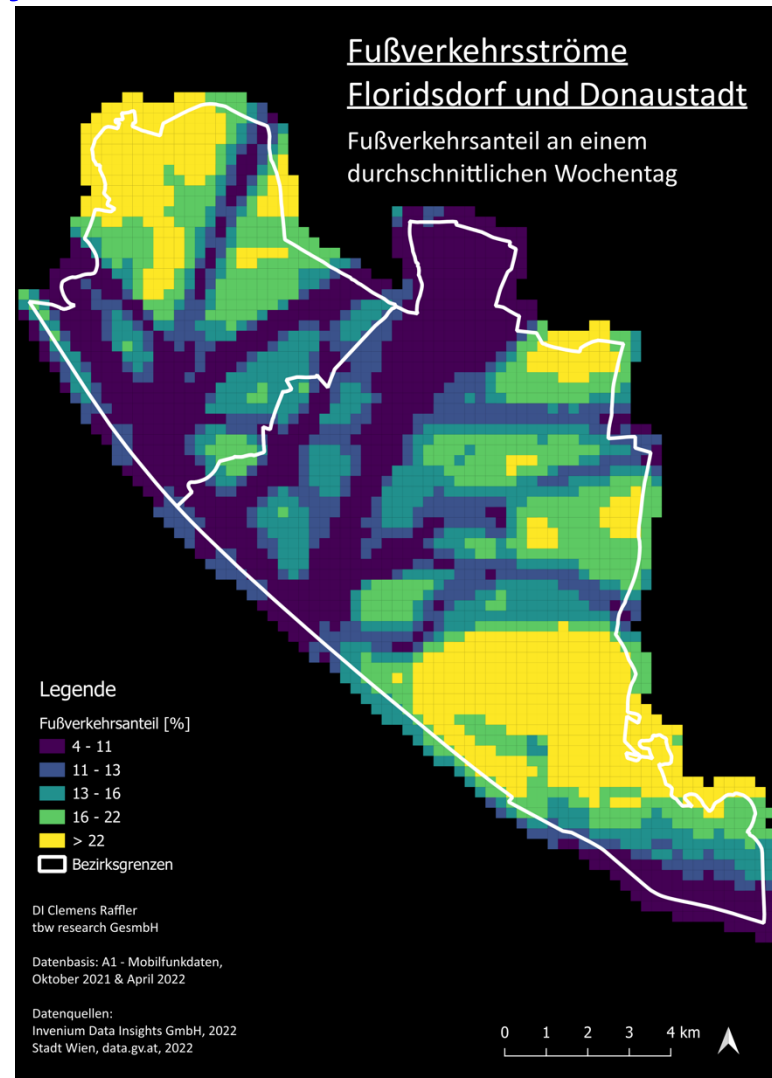
“LiDo Walks” neighbourhood project, Vienna, Austria

- Vienna modal share:
 - 27% walking
 - 7% cycling
 - 38% public transport
 - 27% car
 - 0.4% motorcycle
- Vienna has a modal shift goal:
 - Reducing car modal share to 20%
 - increasing eco-mobility to 80% by 2030.
- 16 neighbourhoods have developed Walking Masterplans
 - →LiDo (Florisdorf & Donaustadt neighbourhoods)

“LiDo Walks” neighbourhood project, Vienna, Austria



Number of pedestrians



Modal share pedestrians

Image © Stadt Wien / tbw research

“LiDo Walks” neighbourhood project, Vienna, Austria

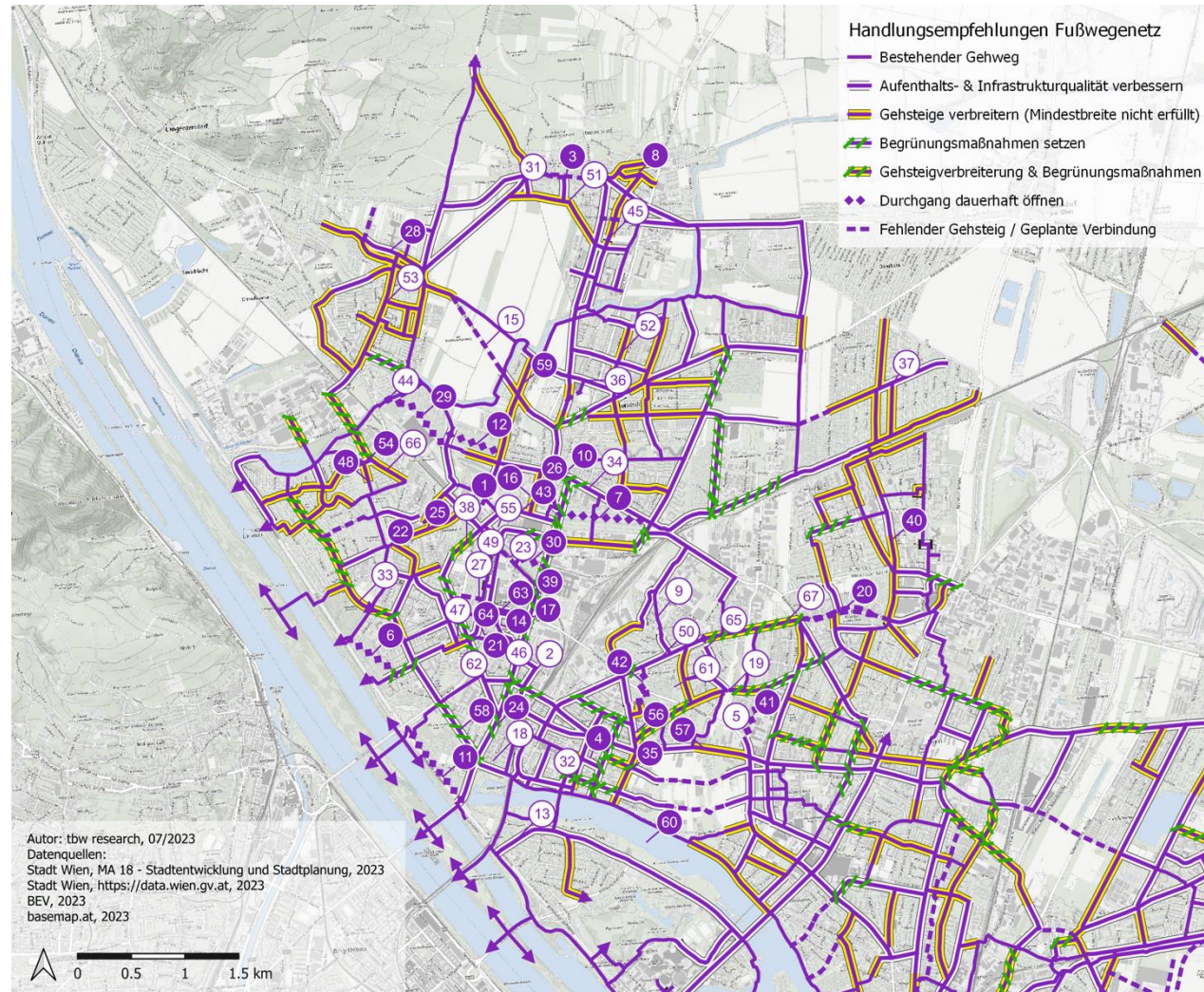
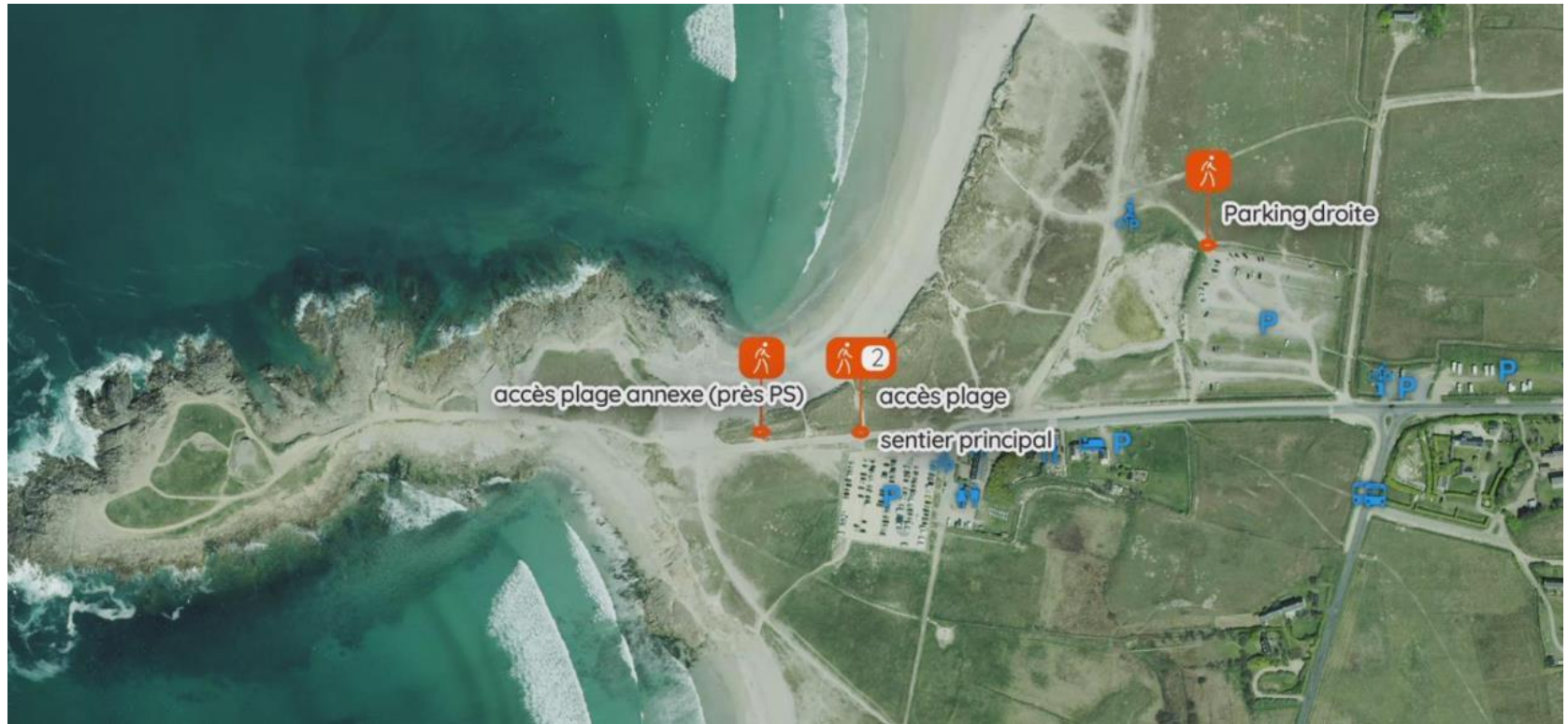


Image © Stadt Wien / tbw research

Identification of 67 interventions on one neighbourhood

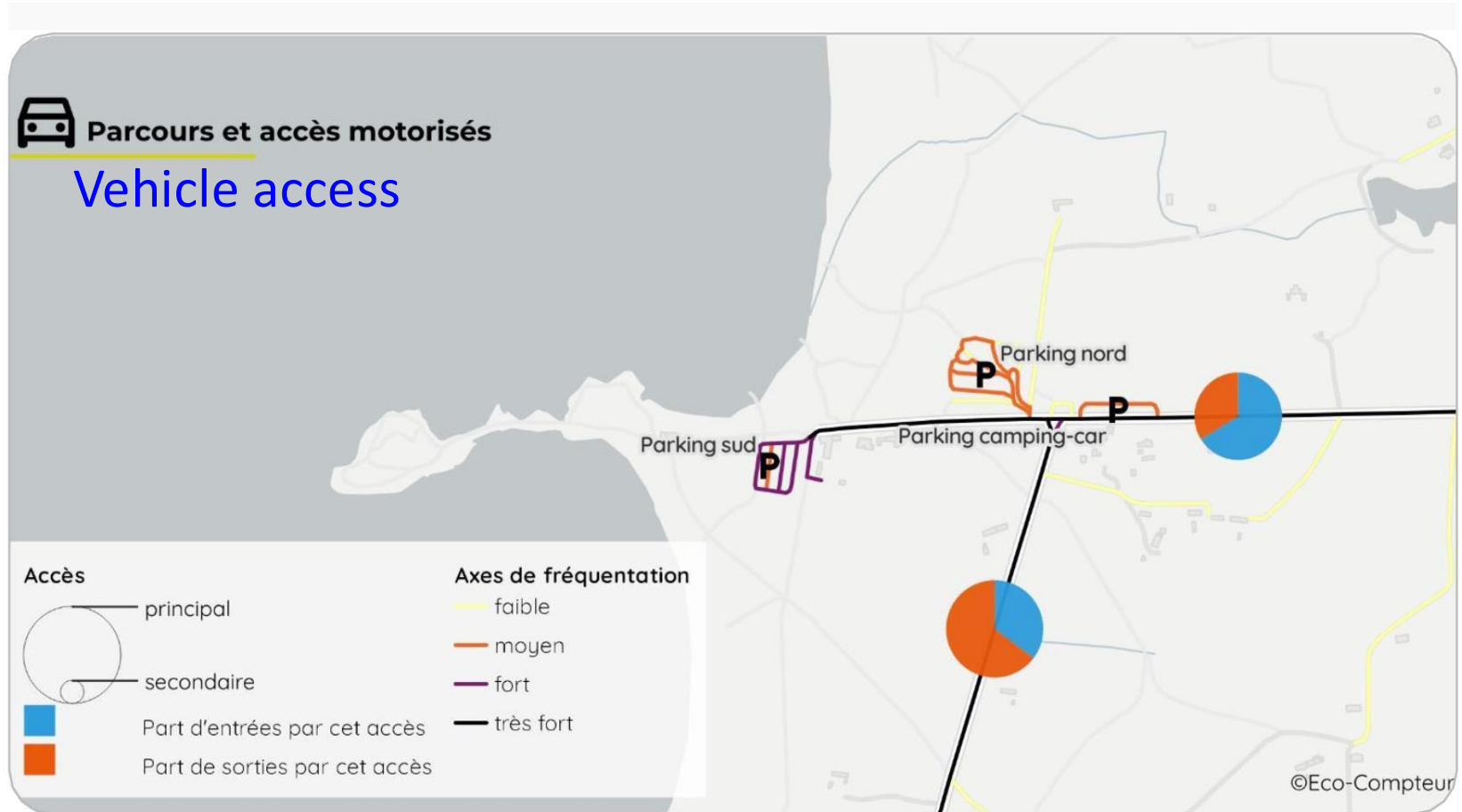
Pointe de la Torche, Brittany



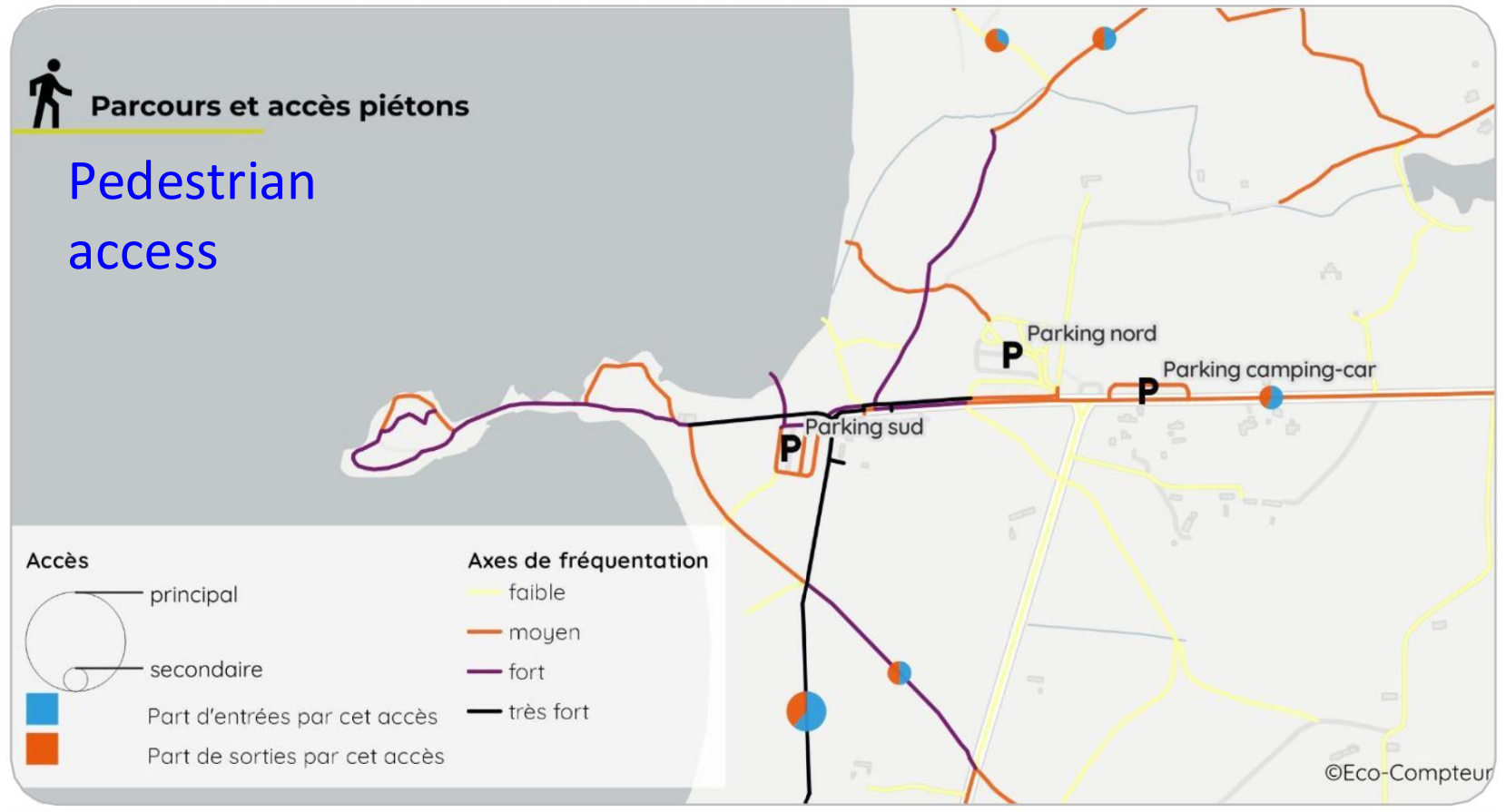
Rural beach location in Brittany

Hosts surfing event, 7th September to 10th October, 2023

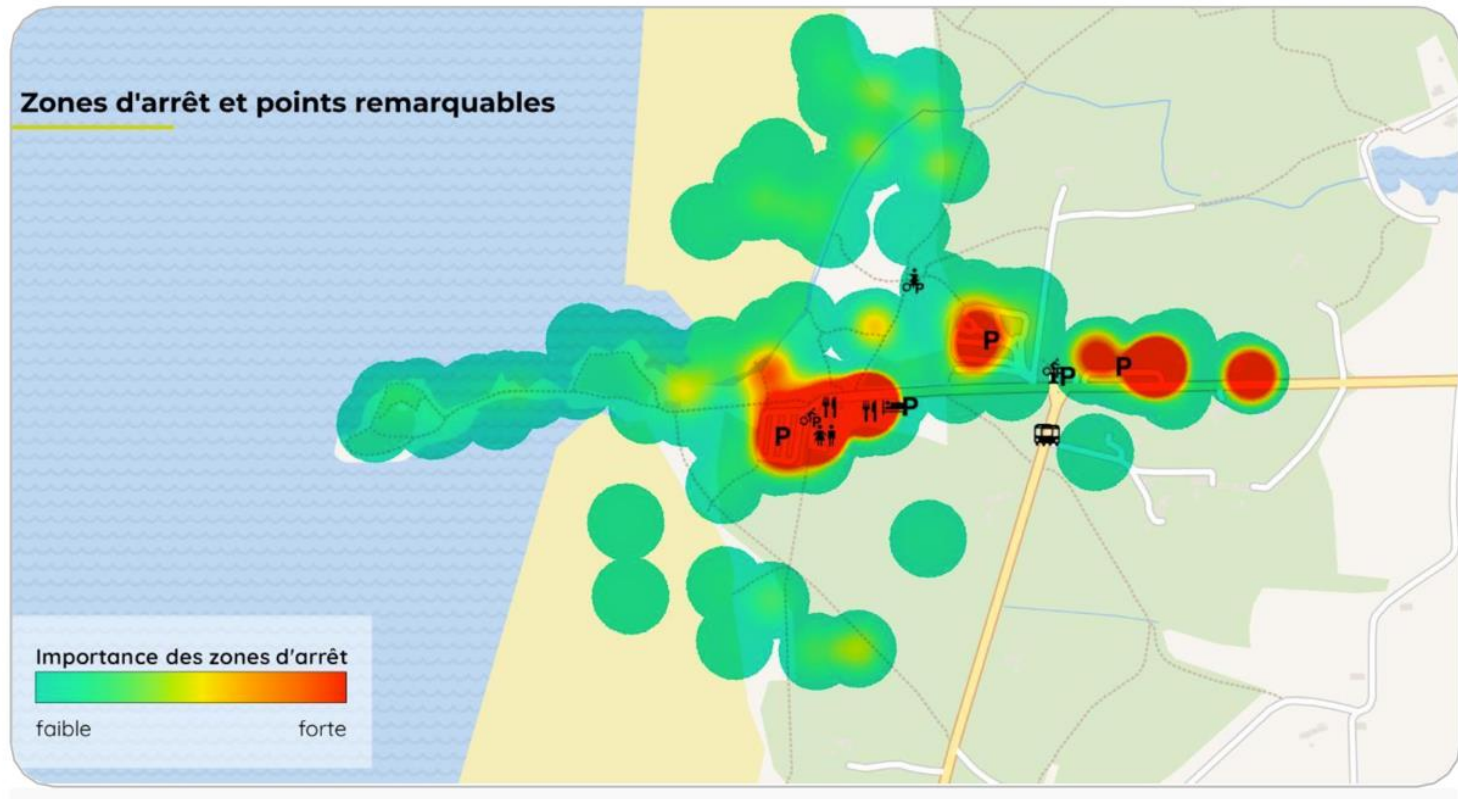
Pointe de la Torche, Brittany



Pointe de la Torche, Brittany



Pointe de la Torche, Brittany



GPS/phone data combined with counter data

Dwell time heat map

Analysis of place of origin, characteristics (age, gender, SEC)

Pointe de la Torche, Brittany

This origin analysis is divided into two categories:

- the origin of foreign visitors by country,
- the origin of French visitors at various administrative levels.

 **74%** of foreigners live in Germany



Visitors' origin
over the entire period



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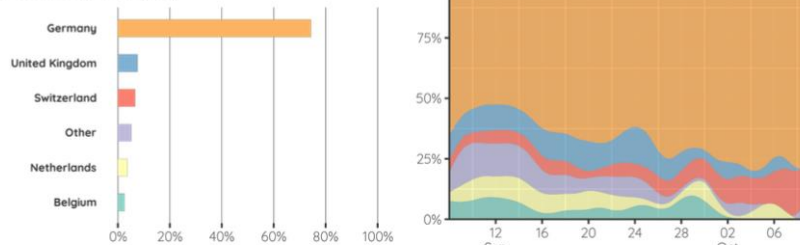
Origin analysis of 95% of foreign visitors



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Top 5 of foreign visitors' origin country

over the entire period



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 **75%** of French visitors live in Brittany (Bretagne)



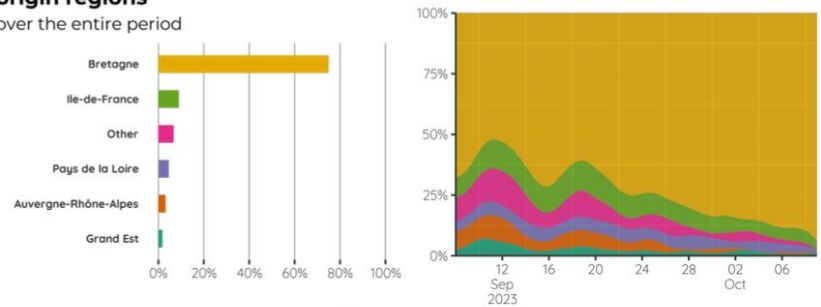
Analyse de la provenance des visiteurs français par région



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Top 5 of french visitors' origin régions

over the entire period



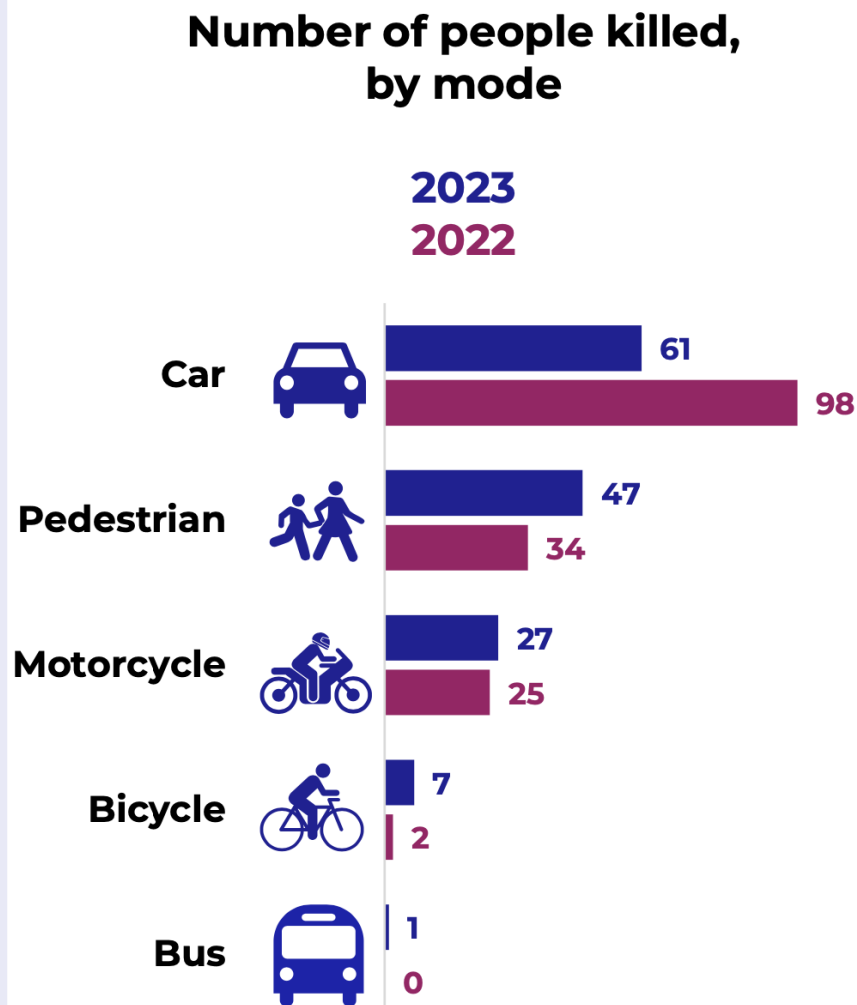
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Conclusions

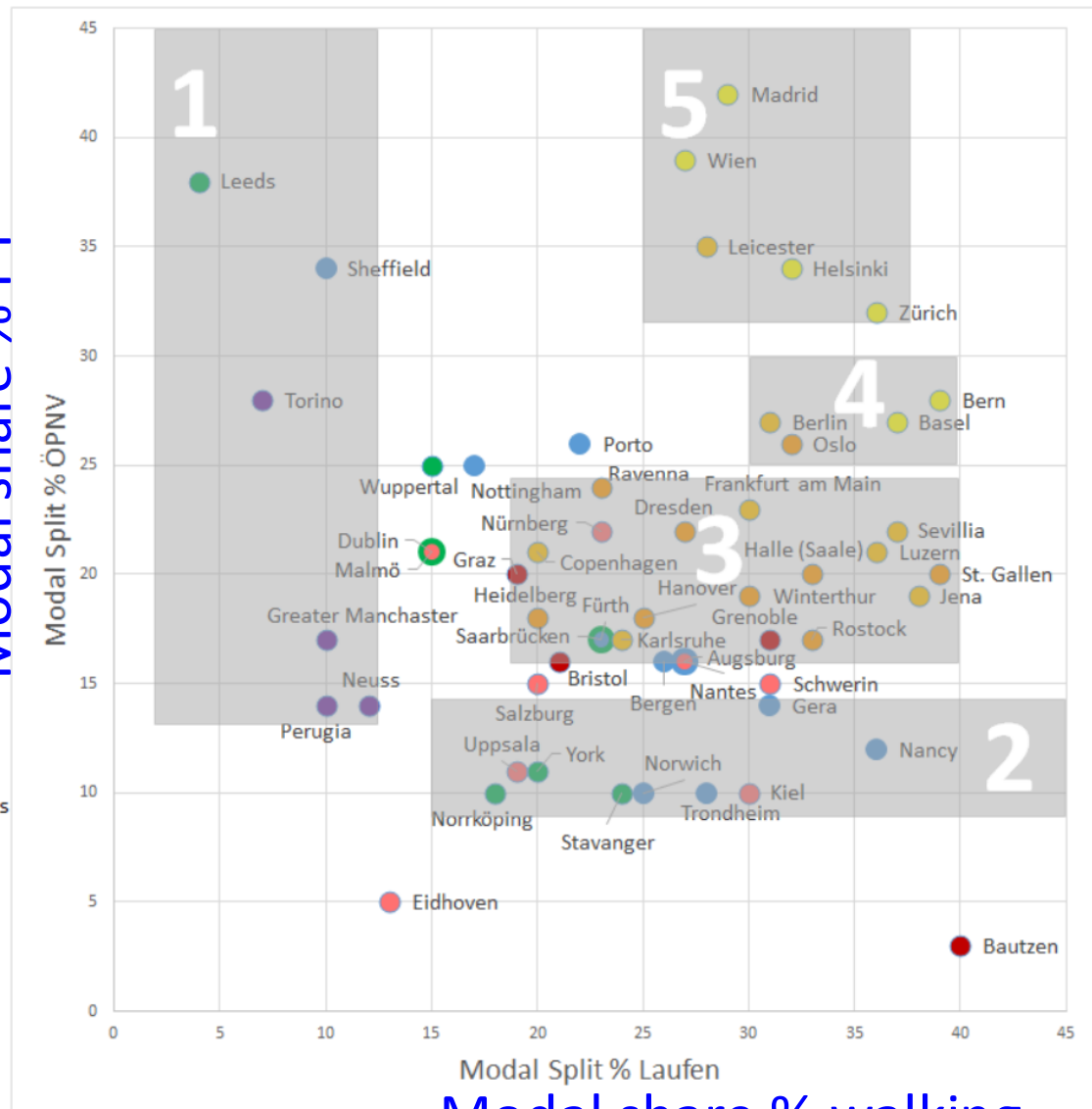
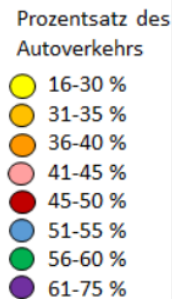
Car was the mode of transport with the highest number of casualties (3,402), and the highest number of people killed (61), followed by pedestrians (972 casualties, 47 killed).

Compared to last year, the total reported casualties decreased for cars (down 38%) but rose for pedestrians (up 38%), pedal cyclists (up 250%), and motorcycles (up 8%).



Conclusions

Modal share % PT



Walking Data - Stage II

Build on findings from Stage I

- link to operations & implementation
- address the blind spot for walking

Three strands:

- 1) Junction modelling – expand case study x 2
- 2) Road safety focus
- 3) developing a technical specification for a regional/national platform – engagement & dissemination

Walking Data - Stage II

- 1) Build on modelling with 2 full case studies with VisWalk
 - Test multiple scenarios e.g. baseline, diagonal crossings, tailbacks, cyclops etc.
 - Comparative with two locations, Inverness and tbc
- 2) Explore implications for road safety
 - E.g. hotspots, preventative “fix my street” community reporting
 - Iteratively inform task 1
 - Keep the door open to other innovation areas e.g. maintenance, lighting, climate risks (e.g. flooding, wind)
- 3) Technical spec for walking data portal/tool
 - Engage with users, suppliers and commissioners (2 workshops)
 - Maximise benefits at both local, and national level
 - This does not mean building this portal/tool

Walking Data

Success metrics and systems impact

March 2026

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